

DESCRIPTION

Under this item the bidder shall conduct the following training program:

The Division of Traffic Engineering requires that a two week training program be set-up. The first week will be on Microprocessors, Controllers and Cabinets. A factory engineer for the controller and cabinet supplier shall conduct a schooling/training program for this week on the operation and maintenance of 2-4 phase, Microprocessor Controllers and the 4-8 phase Microprocessor Controllers.

DAY ONE: Cabinet and cabinet wiring, field wiring. Controller operation and timing: set-up timing, conflict monitor, etc. Go over drawings on all aspects of the equipment.

DAY TWO: Describe operation of various circuits and how digital logic relates to the operation of such circuits. Describe how digital theory work for flip flop's, counters, up/down decade counters, one shots, and etc., should include factory handouts on chip specifications for each chip, outputs and voltage references. Go over block diagram. Show various modules interface with each other and back panel and controller chassis. Describe wiring interconnect of "Motherboard" and various test points for "Motherboard".

DAY THREE: Additional theory training and the start of training in techniques of trouble shooting various types of modules, such as the vehicle pedestrian timing module: input-output module: interval sequence module etc. The use of test equipment required to trouble shoot the equipment.

DAY FOUR: Additional training in trouble shooting techniques, with Hands on Equipment for all modules and "Motherboard".

DAY FIVE: Over all review of previous 4 days and training on other required equipment.

The bidder shall supply an area suitable for 25 people, with chairs, tables, blackboards and nearby restrooms, and be climate controlled for such training. The training personnel shall bring with them sufficient materials and electronic equipment to perform the training as described above and a sufficient quantity of prints and technical manuals required for all equipment.

The second week of training will be conducted by a training specialist such as Gerald P. Handley, Associate Professor - electronics, Tarrant County Junior College, 5301 Campus Drive, Fort Worth, Texas 76119. Phone (817) 531-0439 (South Campus). The training specialist and program will have to be approved by the Engineer.

The second week of training shall consist of 40 hours with schooling on Microprocessors and the theory of Microprocessors and have a program similar to the one below.

DAY ONE: Review basic circuits used for interfaces, review of logic circuits, basic

microprocessor architecture, flow chart basics, Fetch-Execute Timing diagrams.

DAY TWO: System operation, flow chart development, controller microprocessor instruction, conditional data transfer, Interface basics: Control of the microprocessor chip, Direct memory access operation, buss configuration.

DAY THREE: Providing for hardware control of the microprocessor chip, handling of CMSO logic, conditional transfer interface timing, timing diagrams and instructions.

DAY FOUR: Control applications software development, input-output circuitry, conditional data transfer, interface circuitry for interrupt operations, interrupt software.

DAY FIVE: Interrupt sub-routine development, RAM on ROM operation and addressing, memory interface timing diagram, expansion interface circuitry, development software for interface testing, review of previous 4 days and answering any questions.

The bidder will supply an area for such training. The training specialist will supply all materials.

BASIS OF PAYMENT

Payment for this item will be made upon satisfactory completion of the training.

The lump sum price shall include all labor, tools, materials and incidentals necessary to meet the specifications.